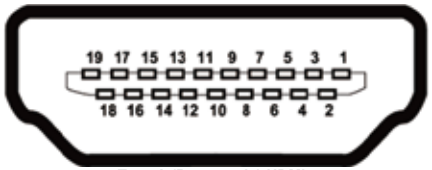
HDMI PIN DEFINITION



Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 8	TMDS Data0 Shield	Pin 15	SCL
Pin 2	TMDS Data2 Shield	Pin 9	TMDS Data0–	Pin 16	SDA
Pin 3	TMDS Data2–	Pin 10	TMDS Clock+	Pin 17	DDC/CEC Ground
Pin 4	TMDS Data1+	Pin 11	TMDS Clock Shield	Pin 18	+5V Power
Pin 5	TMDS Data1 Shield	Pin 12	TMDS Clock–	Pin 19	Hot Plug Detect
Pin 6	TMDS Data1–	Pin 13	CEC		
Pin 7	TMDS Data0+	Pin 14	Reserved(N.C. on device)		

NOTICE

1. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.
2. Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets. Warranty will not cover the damage.
3. The transmission length is largely affected by the type of Cat-5/5e/6 cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m [1,000ft] bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.
4. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended for better performance.
5. To reduce the interference among the unshielded twisted pairs of wires in Cat-5/5e/6 cable, one can use shielded STP cables to improve EMI problems, which is worsen in long transmission.
6. Because the quality of the CAT5/6 cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5/5e/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.
7. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.

Performance Guide for HDMI over Category Cable Transmission

Performance rating		Type of category cable		
Wiring	Shielding	CAT5	CAT5e	CAT6
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
	Shielded (STP)	★	★	★★
Termination		Please use EIA/TIA-568-B termination (T568B) at any time		

HARDWARE INSTALLATION

1. Connect a HDMI or DVI source (such as a Blu-ray Disc player) to the transmitting unit HDEXT1IR232-TX.
2. Connect a HDMI or DVI display (such as a LCD TV) to the receiving unit HDEXT1IR232-RX.
3. Connect IR Blaster/Receiver to both TX and RX units.
4. Connect a Cat-5/5e/6 cable between the transmitting and receiving units.
5. Make sure this Cat-5/5e/6 cable is tightly connected and not loose.
6. Plug in 5V DC power supply unit to the power jack of the receiving unit HDEXT1IR232-RX and the transmitting unit HDEXT1IR232-TX.

WARRANTY

The SELLER warrants the **HDEXT1IR232 HDBasedT Lite Extender with Bi-directional IR & RS-232** free from defects in the material and workmanship for 1 year from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 1 year warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surge. This warranty is offered by the SELLER for its BUYER with direct transaction only. This warranty is void if the warranty seal on the metal housing is broken.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables and power adapters are limited to a 30 day warranty and must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. Also, the technical information contained herein regarding the **HDEXT1IR232** features and specifications is subject to change without further notice.

The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks of HDMI Licensing LLC in the United States and other countries.

LINK BRAND

HDBaseT Lite Extender with Bi-directional IR & RS-232

HDEXT1IR232

User Manual

HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE

MSTR BRAND

Safety and Notice

The **HDEXT1IR232 HDBasedT Lite Extender with Bi-directional IR & RS-232** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **HDEXT1IR232** should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

ESD CAUTION

INTRODUCTION

The **HDEXT1IR232 HDBasedT Lite Extender with Bi-directional IR & RS-232** boosts up your video/audio transmission distance up to 60m (198ft) in HDTV 1080p with 48-bit color depth. HDEXT1IR232 also supports the most advanced 3D video format complaint with HDMI specification and therefore guarantees the highest 3D video compatibility on the market. With only one cost effective Cat.5/5e/6 cable, users can readily extend HDTV sources from DVD players, Blu-ray Disc player, PS3, PC, and any other kinds of sources compliant with TMDS to distant display monitors including HDMI or DVI enabled TV sets or LCD PC monitors. With the advanced design for the latest HDMI technology, deep color video, DTS-HD or Dolby TrueHD audio, and HDCP supports and compatibility are all further insured. This flexibility makes HDCP compliant DVD players or PS3 transmit utmost high quality video and audio with a greater distance at the minimal cost, when integrating several components apart. In addition, HDEXT1IR232 is also equipped with bi-directional IR pass-through path and RS-232 serial port control. These bonus features allow users to boost IR control distance up to 60m (198 ft) and makes IR control possible through only single Cat.5/5e/6 cable including HDMI signals. In addition, serial port offers the convenient path for interactive application, such as touch panels.

The HDEXT1IR232 includes two units: transmitting unit HDEXT1IR232-TX and receiving unit HDEXT1IR232-RX. The transmitting unit is used to capture the input HDMI / DVI signals with IR control packets and carry the signals via one cost effective Cat.5/5e/6 cable. The receiving unit is responsible for equalizing the transmitted HDMI signal and reconstructing IR signals. HDEXT1IR232 offers the most convenient solution for digital signage with long distance A/V transmission path, and with 10G transmission width ready, HDEXT1IR232 is ready for your next HDMI generation and applications!

FEATURES

- Support HDMI Deep Color & full 3D & 4K2K@30 (HDBaseT-Lite technology)
- Extend the transmission up to 60m (198ft) from the HDMI source at Full HD 1080p 48-bit and 40m (130ft) at 4K2K@30
- HDCP & EDID Bypass
- CEC support
- Auto equalization
- Pure unaltered uncompressed 7.1ch digital HDMI over Cat.5/5e/6 cable transmission
- DTS-HD Master Audio and Dolby TrueHD high bit rate audio support
- Support full frequency IR signal from 20KHz to 60KHz
- Bi-directional IR path-through
- Full Duplex RS-232 control up to 115,200 bps through connector
- Wall mounting housing design for easy and robust installation

The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ45 connectors is recommended.

PACKAGE CONTENTS

- 1x HDEXT1IR232 [TX&RX]
- 2x 5V DC power supply
- 1x User Manual
- 1x IR blaster
- 1x IR receiver

SPECIFICATIONS

Model Name		HDEXT1IR232	
Technical		**HDEXT1IR232-TX**	**HDEXT1IR232-RX**
Role of usage		Transmitter [TX]	Receiver [RX]
HDMI compliance		HDMI Deep Color, full 3D & 4K2K@30	
HDCP compliance		Yes	
Video bandwidth		Single-link 340MHz [10.2Gbps]	
Video support		480i / 480p / 720p / 1080i / 1080p60	
HDMI over UTP		1080p@60 60m (198ft) [CAT5e]	
Audio support		Surround sound [up to 7.1ch) or stereo digital audio	
Equalization		Auto	
Input TMDS signal		1.2 Volts [peak-to-peak]	
Input DDC signal		5 Volts [peak-to-peak, TTL]	
ESD protection		[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge] [2] Core chipset — ±8kV	
PCB stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
IR pass-thru		Bi-directional	
RS-232 support		Yes	
Input		1x HDMI 1x 3.5mm	1x RJ-45[HDBaseT] 1x 3.5mm
Output		1x RJ-45[HDBaseT] 1x 3.5mm	1x HDMI 1x 3.5mm
HDMI source control		Controllable via IR pass-through from RX to TX with IR extenders	
HDMI connector		Type A [19-pin female]	
Min DIN connector		DIN-9	
RJ-45 connector		WE/SS 8P8C(Reverse Mode)	
Rotary control switch		None	
3.5mm connector		IR receiver / IR blaster	IR receiver / IR blaster
Mechanical		**HDEXT1IR232-TX**	**HDEXT1IR232-RX**
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	73 x 89 x 26mm [2.9" x 3.5" x 1"]	
	Package	175 x 125 x 216mm [6.8" x 4.9" x 8.5"]	
	Carton	647 x 366 x 237mm [2'1" x 1'2" x 9.3"]	
Weight	Model	200g [7oz]	196g [6.9oz]
	Package	900g [2 lbs]	
Fixedness		Wall-mounting case with screws	
Power supply		5V 2A DC	
Power consumption		3 Watt [max]	7 Watt [max]
Operation temperature		0~40°C [32~104°F]	
Storage temperature		-20~60°C [-4~140°F]	
Relative humidity		20~90% RH [no condensation]	

PANEL DESCRIPTIONS

Transmitting unit ► HDEXT1IR232-TX*[RX]*
[Receiving unit]

Latch-locking power jack: Connect to 5V DC power supply

LED: Power indicator

HDMI IN[OUT]: Connects to a HDMI source[Display] with a HDMI male-male cable

IR Blaster: Infrared 3.5mm socket for plugging in the extension cable of IR blaster

IR Receiver: Infrared 3.5mm socket for plugging in the extension cable of IR receiver

RS-232: Connect to host/device serial port with a DSUB-9 male-male cable here

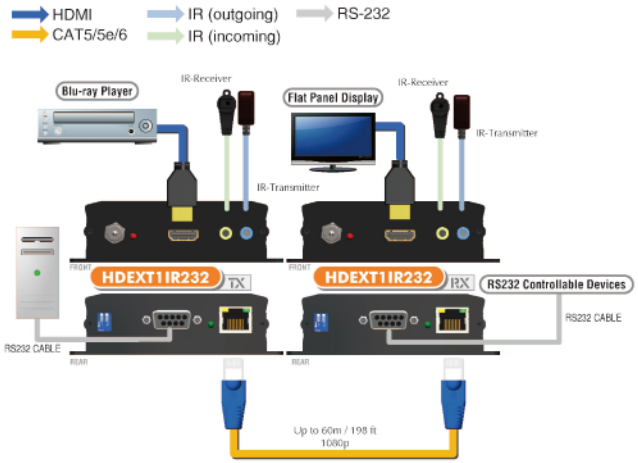
Dip Switch: Setup the RS-232 mode for serial communication channel

RJ45: Plug in a Cat-5/5e/6 cable that needs to be linked to the TX or RX.

LED: TX/RX link indicator

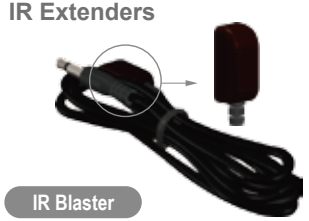
DIP Switch Position TX & RX		Description
PIN#1	ON [⬇](DTE)	*TxD: The 2nd pin of RS-232, which is in charge of sending data* *RxD: The 3rd pin of RS-232, which is in charge of receiving data*
	OFF [⬆](DCE)	*TxD: The 3rd pin of RS-232, which is in charge of sending data* *RxD: The 2nd pin of RS-232, which is in charge of receiving data*
PIN#2	ON [⬇]	*Firmware Update*
	OFF [⬆]	*Normal*

CONNECTION DIAGRAM



IR PASS-THROUGH

IR Extenders



IR Blaster

IR Receiver

IR Sockets

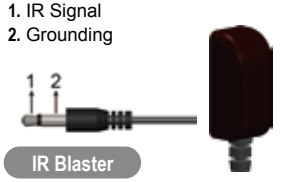
IR BLASTER: plug in the IR blaster to emit all IR command signals received from the IR receiver from the other end to control the devices corresponding to the IR signals.

IR RECEIVER: plug in the IR receiver to receive all IR command signals from the IR remote controls of the corresponding devices.

Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets. Warranty will not cover the damage.

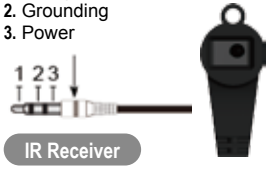
Definition of IR Earphone Jack

1. IR Signal
2. Grounding



IR Blaster

1. IR Signal[20-60 kHz]
2. Grounding
3. Power



IR Receiver

You can buy any IR extension cables in the market that are compatible to the definition of the IR sockets for the matrix if necessary for replacement use. However, IR cables longer than 2m (6-ft) may not work.